

4.13. BOATING CLEANING

Management Measure for Boat Cleaning:

For boats that are in the water, perform cleaning operations to minimize, to the extent practicable, the release to surface waters of (a) harmful cleaners and solvents and (b) paint from in-water hull cleaning

Management Measure Description

Preventing the entry of chemicals from boat cleaners, cleaning solvents, and antifoulant paint into marina waters is the most direct way to prevent harm to the aquatic environment from these products. The management practices associated with this management measure are easily implemented. They can be practiced by boat owners and marina managers alike, and they do not interfere with the need to keep boats clean.

Marina employees and boat owners use a variety of boat cleaners, such as teak cleaners, fiberglass polishers, and detergents, and boats are usually cleaned while in the water or onshore adjacent to the water. Some of the cleaner used ultimately ends up in the water. Additionally, when boat bottoms are cleaned aggressively while boats are in the water, antifouling paint can be abraded off and deposited into marina waters and sediments. This management measure is aimed at minimizing the release of harmful ingredients in cleaners, bottom paints, and harmful residues on boat hulls to marina basin waters.

Many cleaners contain harsh chlorine, ammonia, phosphates, and other caustic chemicals that harm fish and other aquatic life. If a product's label warns about potential harm to people's skin or eyes, the product is most likely harmful to aquatic life. Some chemicals in these cleaners bioaccumulate in aquatic organisms (that is, they become more concentrated as they are ingested successively by animals higher on the food chain) and could eventually bioaccumulate in fish or shellfish that are be eaten by people, posing a health risk.

Under the Clean Water Act, the NPDES Storm Water Permit Program defines boat wash water as "processed water." Discharge of any processed water by a marina or boatyard is illegal nationwide without a formal permit from EPA or a state government. This permit requirement does not apply to boat owners who are cleaning their own boats, but it does apply to anyone who professionally cleans boats in a marina.

If work is done sensibly, chemicals and debris from washing boat topsides, decks, and wetted hull surfaces while boats are in the water can be kept out of the water.

Cleaning boats that are transported from one waterbody to another is important to preventing the spread of exotic species, and it is a highly recommended practice.

Applicability

This management measure primarily concerns the actions of boat owners, and the BMPs are to be implemented primarily by individual boat owners. The information contained here is provided to educate marina managers about the importance of these measures in maintaining a clean marina, and marina managers are encouraged to incorporate the BMPs mentioned here into education programs and staff activities.

Best Management Practices

- ◆ *Wash boat hulls above the waterline by hand. Where feasible, remove boats from the water and clean them where debris can be captured and properly disposed of.*

Washing the boat hull by hand (that is, *not* by pressure washing) reduces the amount of abrasion to the hull, which results in less paint chipped off and less debris lost to the marina basin. Where feasible, remove boats from the water and clean them where debris can be captured and properly disposed of.

- ◆ *Attempt to wash boats frequently enough that the use of cleansers will not be necessary.*

Frequent washings with water alone can prevent a boat from reaching a point at which abrasive or caustic cleansers are necessary to adequately clean the hull or topsides. This practice will help prevent the possibility of spilling chemicals into the water.

- ◆ *If using cleansers, buy and use ones that will have minimal impact on the aquatic environment.*

“Nontoxic” and “phosphate-free” cleaners are available and friendlier to the environment than products with toxic components. Products that carry safety warnings about the harm they can cause to people (Figure 4-24) can harm the environment as well.

Although “biodegradable” sounds good, it does not mean that a product is nontoxic. Biodegradable products are those which can be broken down by bacteria, other organisms, or natural processes. The degradation of “biodegradable” products in water uses dissolved oxygen, and therefore these products can lower dissolved oxygen levels. Also, some products might not biodegrade in aquatic environments—freshwater or marine.

- ◆ *Switch to long-lasting and low-toxicity or nontoxic antifouling paints.*

Considerable progress has been made in antifouling paint technology in recent years, and more

improvements are expected that will reduce and effectively eliminate the toxicity of hull paints and increase their ability to keep hulls free of fouling growth for longer periods. Silicone-based and hard-surfaced, nonablative copper metal-based paints are such recent innovations. In general, harder paints last longer, and some reduce the need to repaint boat bottoms to once every 10 years. More information on antifouling paints and specifications is available on the Internet (search on “antifoulants”) or can be provided by a marine paint supplier.

- ◆ *Avoid in-the-water hull scraping or any abrasive process done underwater that could remove paint from the boat hull.*

Any hull cleaning performed in the water will remove the least amount of paint if done with something soft. Mechanical underwater scrubbing machines can scrape and chip off antifouling paint and encourage fouling growth on the hull.

Frequent hand washing of hulls should not cause any paint to abrade or chip off but can adequately remove scum and fouling organisms.

In-the-water hull cleaning performed by divers should also be done in a manner that does not remove paint from the hull.

- ◆ *Ensure that adequate precautions have been taken to minimize the spread of exotic and invasive species when boats are transferred from one waterbody to another.*

Boat owners should be aware of the importance of thoroughly cleaning boats taken from waters known to be inhabited by exotic or invasive species. Some species can be introduced to new waterbodies this way. Generally, the spread of exotic and invasive species can be controlled by washing a boat in hot water and letting it thoroughly dry for a minimum of 5 days before putting the boat into a different waterbody. The recom-

WARNING: EYE IRRITANT. Avoid contact with eyes. May cause skin irritation. For sensitive skin or prolonged use wear gloves. Use with adequate ventilation. FIRST AID: EYES—rinse eyes with water for 15 minutes, call a physician. SKIN—rinse with water. IF SWALLOWED—drink a glassful of water. Call a physician. KEEP OUT OF REACH OF CHILDREN.

Figure 4-24. Warning sign that indicates toxicity to both people and the environment.

Associated Marine Technologies (Florida) installed a closed-loop pressure washing system for boat bottoms.

- Green Cove Marina (New Jersey) designed its own sump drain system and lift pump under the boat lift. The system pushes dirty water into a filter and recycling system consisting of three 55-gallon filtering drums and a 225-gallon holding tank. The debris is dried and sent to a landfill.
- Harbour Towne Marina (Florida) installed a wastewater filtration system to clean the power wash water to meet the county's gray water standards for discharge into the municipal sewer system. A concrete washing pad slopes down to a central drain, where the washwater is filtered and treated with three different chemicals. The marina hauled and washed 650 boats in the 1994–1995 season.
- Summerfield Boat Works (Florida) installed a water filtration system that includes an ultraviolet light ozone generator to oxidize all dissolved pollutants and erase odor. The wastewater is then recycled within the marina. The boatyard pays for its wastewater treatment program by charging an Environmental Cost Obligation for each boat hauled for pressure washing.

(USEPA, 1996: *Clean Marina—Clear Value*)

mendations for specific species vary, and information should be provided to boaters about any exotic or invasive species known to occur in waterbodies connected to a marina's waters, or where patrons from a marina are known to visit.

◆ *Minimize the impacts of wastewater from pressure washing.*

There are several ways to treat the wastewater from pressure washing to remove the paint chips or particles that might be present:

- *Settling:* Trap the water in a container and allow it to sit long enough after washing to permit any particles to settle out of the water. This method will remove only the particles large enough to settle out of solution.
- *Filtration:* Wastewater can be passed through one or more filters that screen out particles. A filter cloth used at the wash site can be effective for straining out visible particles. Additional filtration is achieved by using a series of filters with smaller and smaller mesh sizes.
- *Treatment:* Chemical or biological cleaning technologies can be used to treat the waste-

water and remove contaminants. Treatment can remove oil and grease, metals, or other contaminants. Once wastewater has been treated, it can be discharged into marina waters or a sanitary sewer (check local regulations) or can be reused at the marina for more boat washing or grounds watering.

Effluent from pressure washing usually requires a storm water discharge permit, issued by the state or locality. Closed loop or zero discharge pressure wash systems usually do not require a permit. Check with the appropriate environmental authority before discharging any effluent to a sewer system.

BMP Summary Table 13 summarizes the BMPs for Boat Cleaning mentioned in this guidance.

BMP Summary Table 13. BOAT CLEANING MANAGEMENT

MANAGEMENT MEASURE: For boats that are in the water, perform cleaning operations to minimize, to the extent practicable, the release to surface waters of (a) harmful cleaners and solvents and (b) paint from in-water hull cleaning.

APPLICABILITY: Boat owners. Marina managers should be aware of the issues presented and inform boaters to the extent feasible.

ENVIRONMENTAL CONCERNS: Many boat cleaners contain harsh chlorine, ammonia, phosphates, and other chemicals that can harm fish and other aquatic life. Some chemicals in these cleaners become more concentrated in aquatic organisms as they are ingested by other animals and can eventually find their way into fish and shellfish, which might be eaten by people. Chemicals and debris from washing boat topsides, decks, and hull surfaces can be kept out of the water by using some common sense boating practices.

BOAT CLEANING PRACTICES

Best Management Practice Examples	Marina Location & Usage	Benefits to Marina	Projected Environmental Benefits	Initial Cost Estimate	Annual Operation & Maintenance Cost Estimate	Notes
Wash boat hulls above the waterline by hand. Where feasible, remove boats from the water and clean them where debris can be captured and properly disposed of	Boats in marina basin; generally recommended	MODERATE; handwashing is less abrasive than other methods; works well if done frequently	MODERATE; washing by hand reduces abrasion, which chips antifouling paint into the water	LOW	LOW	
Attempt to wash boats frequently enough that the use of cleansers will not be necessary	Boats in marina basin; generally recommended	MODERATE; eliminates use of cleansers	MODERATE	LOW	LOW	Frequent handwashing with water and a cloth is recommended
If using cleansers, buy and use one that will have minimal impact on the aquatic environment	Boats in marina basin; generally recommended	MODERATE to HIGH; these products work well and are often less hazardous to humans	HIGH; reduces chance that harmful chemicals will enter aquatic/marine environment	LOW	LOW	Marina managers can encourage use of environmentally friendly products by stocking them in the marina store
Switch to long-lasting and low-toxicity or nontoxic antifouling paints	Marina store, work area, and boat; generally recommended	HIGH for boater; harder paints last longer and can last several seasons before needing repainting	MODERATE to HIGH; new antifouling paints are effective and less toxic or nontoxic to aquatic animals	LOW to MODERATE	LOW to MODERATE	Use of antifouling paint on boats kept in fresh water is discouraged except, for example, where zebra mussels are a problem
Avoid in-the-water hull scraping or any abrasive process done underwater that could remove paint from the boat hull	Boats in marina basin; generally recommended	LOW to MODERATE; depends on number of boaters who work on boat hulls in slips	MODERATE; can reduce greatly the amount of paint lost to the water	LOW	LOW	
Ensure that adequate precautions have been taken to minimize the spread of exotic and invasive species when boats are transferred from one waterbody to another	Boats in marina basin; generally recommended	MODERATE to HIGH; exotic species infestations can be very expensive to combat	MODERATE to HIGH; exotic and invasive species can harm native species and change ecosystem dynamics	LOW	LOW	Much less expensive to prevent infestations than to control established exotic and invasive species
Minimize the impacts of wastewater from pressure washing	Marina work area; generally recommended	MODERATE; removing larger particles from wastewater can reduce treatment needs	MODERATE; reduces potential for release of debris to surface waters	MODERATE	LOW	Wash water from hull washing is processed water and cannot be discharged directly to U.S. waters; check local regulations